

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/597,939	ZHENG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	JUN LI	1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to response filed on 12/07/2009 and a telephonic interview on 1/12/2010.
2. ☒ The allowed claim(s) is/are 1,5,9-12,18-22,24-29,34-37,39 and 41.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☒ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: foreign application Canada 2457609, 02/13/2004.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                               | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>01/19/2010</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material         | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                           |
|  | 9. <input type="checkbox"/> Other _____.   |

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ms. Heather Colburn on January 12<sup>th</sup> 2010.

The examiner has not checked the specification to the extent necessary to determine the presence of all possible minor errors (grammatical, typographical and idiomatic). Cooperation of the applicant(s) is requested in correcting any errors of which applicant(s) may become aware of in the specification, in the claims and in any future amendment(s) that applicant(s) may file.

Applicant(s) is also requested to complete the status of any copending applications referred to in the specification by their Attorney Docket Number or Application Serial Number, if any.

The status of the parent application(s) and/or any other application(s) cross-referenced to this application, if any, should be updated in a timely manner.

The application has been amended as follows:

Claims:

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Claim 1 has been rewritten as follows:

1. A solid oxide fuel cell system comprising:

(a) at least one tubular solid oxide fuel cell comprising a ceramic solid state electrolyte layer and inner and outer electrode layers concentrically arranged around and sandwiching the electrolyte layer, the inner electrode layer fluidly communicable with only one of an oxidant reactant and a fuel reactant, and the outer electrode layer fluidly communicable with only the other of the oxidant and fuel reactants; and

(b) a combustion heater fluidly communicable with the oxidant and fuel reactants such that combustion can occur, the heater mounted in sufficient thermal proximity to the fuel cell that the fuel cell can be heated by the combustion to an operating temperature, the heater comprising a porous outer tube and a porous inner tube within the outer tube, an inside of the inner tube defining an inner combustion chamber fluidly communicable with the oxidant and fuel reactants which form a mixture therein, and an annular space between the inner and outer tubes defining an outer combustion chamber in which fuel and oxidant mixture radially permeating through the inner tube is combusted, the outer tube sufficiently porous to enable the fuel and air reactants to pass through the outer tube.

Claim 24, line 2, "23" has been replaced with --1--;

Claim 25, line 1, "23" has been replaced with --1--;

Claim 39, line 1, "23" has been replaced with --1--;

Claim 41, line 1, "23" has been replaced with --1--;

Claims 14, 23 and 38, 40 are cancelled.

### **Reasons for allowance**

The instant application is patentable distinct over the closed prior arts Sammes (US6492050), Alvin (US2005/0066663), Shen (CN85100996) **and** Kim (US5932181) alone because these references alone or in combination fail to teach an annular combustion chamber between the outer and inside tube, neither they teach a third tube inside the inner tube nor teach an annular combustion chamber between the heater and the thermal casing. On the contrary, they only teach combustion inside the combustion chamber at the edges of tubes.

### ***Conclusion***

Claims 1, 5, 9-12, 18-22, 24-29, 34-37, 39 and 41 are allowed and all other claims are cancelled.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am-5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/  
Examiner, Art Unit 1793  
01/19/2010

/Melvin Curtis Mayes/  
Supervisory Patent Examiner, Art Unit 1793